

PTO/PCT R d 07 MAR 2002
PCT

To:

ASHBY, Kevin
SOCIETE DES PRODUITS NESTLE S.A.
P.O. Box 353
CH-1800 Vevey
SUISSE

30 NOV. 2001

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year) 28.11.2001

Applicant's or agent's file reference
NO 6392/WO

IMPORTANT NOTIFICATION

International application No.
PCT/EP00/08870

International filing date (day/month/year)
08/09/2000

Priority date (day/month/year)
09/09/1999

Applicant
SOCIETE DES PRODUITS NESTLE S.A.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

 European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Götz, K

Tel. +49 89 2399-7381



PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
in its capacity as elected Office

Date of mailing (day/month/year) 11 June 2001 (11.06.01)	
International application No. PCT/EP00/08870	Applicant's or agent's file reference 6392/WO
International filing date (day/month/year) 08 September 2000 (08.09.00)	Priority date (day/month/year) 09 September 1999 (09.09.99)
Applicant YOUNG, Linda, A. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
06 April 2001 (06.04.01)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Form PCT/IB/331 (July 1992)

Authorized officer

Pascal Piriou

Telephone No.: (41-22) 338.83.38

EP0008870

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 March 2001 (15.03.2001)

PCT

(10) International Publication Number
WO 01/17366 A1

(51) International Patent Classification⁷: A23K 1/16, 1/18

(74) Agent: ASHBY, Kevin; Société des Produits Nestlé S.A.,
P.O. Box 353, CH-1800 Vevey (CH).

(21) International Application Number: PCT/EP00/08870

(22) International Filing Date:
8 September 2000 (08.09.2000)

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/152,984 9 September 1999 (09.09.1999) US

(84) Designated States (*regional*): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

(71) Applicant (*for all designated States except US*): SOCI-
ETE DES PRODUITS NESTLE S.A. [CH/CH]; P.O. Box
353, CH-1800 Vevey (CH).

Published:

- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): YOUNG, Linda, A.
[US/US]; 2402 NE Parkway, St Joseph, MO 64506 (US).
CZARNECKI, Gail [US/US]; 3550 SE 95th Street, Easton,
MO 64443 (US).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



WO 01/17366 A1

(54) Title: IMPROVING CONDITION OF ELDERLY PETS

(57) Abstract: A method is provided for improving the condition and/or increasing the longevity of elderly pets. The elderly pet is administered an effective amount of a nutritional composition which contains a calcium source and an antioxidant source, such as of vitamins or vitamin precursors which have antioxidant properties. Examples of such vitamins and precursors include β -carotene and vitamin E.

10/070777

JC10 Rec'd PCT/PTO 07 MAR 2002

Improving Condition of Elderly PetsField of the Invention

5 This invention relates to a composition for improving the condition of elderly pets. The invention also relates to a method for improving the condition of elderly pets.

Background of the Invention

10

Elderly pets often become frail in their last few years of life. From an appearance point of view, they become thin and have poor skin and coat condition. Other symptoms include weight gain, increased water intake, digestive system problems, and joint stiffness and energy loss or lower activity levels in general. Also, the density of their bones may decrease making them susceptible to bone breakage. Further, elderly pets may be more susceptible to cancers than younger animals.

20 Certain of these problems may be effectively treated using medication. However, a better alternative would be to delay the onset of these problems, or treat these problems, through diet adjustments. In particular, elderly animals should be fed a balanced, maintenance food that contains high quality protein, lower amounts of fat to reduce energy intake, dietary fiber, and antioxidants.

25 However, despite the use of balanced, maintenance foods, the condition of elderly animals may deteriorate rapidly. Therefore there is a need for nutritional ways of improving the condition and/or increasing the longevity of elderly pets.

Summary of the Invention

30 Accordingly, in one aspect, this invention provides a method for maintaining or improving the condition of elderly pets, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of antioxidant. The said antioxidant source may be selected from sources of vitamins and vitamin precursors. In a preferred embodiment, the source is selected from sources of vitamin E, vitamin C and β -carotene.

35

It is surprisingly found that the condition of elderly pets, which are administered a calcium source and a source of a nutritional agent, such as a vitamin or a vitamin precursor which has antioxidant properties, markedly improves. Further, the survivability and hence longevity of the pets improve.

5 In a further aspect, this invention provides a method for increasing the longevity of elderly pets, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of an antioxidant. The antioxidant source may be selected from the group of sources of vitamins and vitamin precursors.

10 Preferably, the nutritional composition includes a source of zinc. The nutritional composition may also contain a source of glutamine.

The invention extends further to a method of increasing the quality of life of an elderly pet, the method comprising administering to the pet a nutritional composition which contains a calcium source, a zinc source and a source of an antioxidant. The antioxidant source may be selected from β -carotene vitamin C and vitamin E.

The composition preferably is administered in an amount effective to increase the activity level of the pet.

20 According to a further aspect, the invention provides a method of increasing the activity level of an elderly pet, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source, a zinc source and a source of an antioxidant. The antioxidant source may be selected from, β -carotene and vitamin E.

The nutritional composition may also include a nutritional agent which promotes the growth of bifido- and lactic-bacteria in the gastro-intestinal tract of the pet. For example, the nutritional agent may be a prebiotic or a probiotic micro-organism.

Preferably, the nutritional composition is a complete and nutritionally balanced pet food.

30 In another aspect, this invention provides a pet food for elderly pets, the pet food comprising a protein source, a lipid source, a calcium source, a zinc source, β -carotene and vitamin E.

The pet food may comprise at least about 3 g/1000 kcal of calcium, at least about 50 mg/1000 of zinc, , at least about 5 mg/1000 kcal of β -carotene, and at least about 150 IU/1000 kcal of vitamin E.

"Prebiotic" means a substance or compound which is fermented by the intestinal flora of the pet and hence promotes the growth or development of bifido- and lactic-bacteria in the gastro-intestinal tract of the pet at the expense of pathogenic bacteria. The result of this fermentation is a release of fatty acids, in particular short-chain fatty acids in the colon. This has the effect of reducing the pH value in the colon.

"Probiotic micro-organism" means a micro-organism which beneficially affects a host by improving its intestinal microbial balance (Fuller, R; 1989; J. Applied Bacteriology, 66: 365-378). In general, probiotic micro-organisms produce organic acids such as lactic acid and acetic acid which inhibit the growth of pathogenic bacteria such as *Clostridium perfringens* and *Helicobacter pylori*.

Detailed Description of the Preferred Embodiments

Embodiments of the invention are now described by way of example only. The invention is based upon the finding that the administration to an elderly pet of an effective amount of a calcium source and a source of an antioxidant having antioxidant properties, improves the condition and/or longevity of the pet. By "elderly" is meant a pet of age 7 years or more, although in certain cases, younger pets may exhibit characteristics and conditions generally associated with older animals. In preferred embodiments, the source of antioxidant is a source of vitamins or vitamin precursors.

The calcium source and the source of vitamins which have antioxidant properties, are administered as part of a nutritional composition. The nutritional composition is conveniently formulated into a pet food. The pet food may be any suitable pet food, for example a canned pet food, a semi-moist pet food, or a dried pet food. Further, the exact composition of the pet food is not critical.

The pet food thus contains a source of antioxidants, advantageously selected from the group of sources of vitamins and vitamin precursors. Suitable examples of such antioxidants include β -carotene, vitamin E and vitamin C. Preferably the pet food contains β -carotene and vitamin E.

If β -carotene is used, it may be present in an amount above about 4 mg/1000 kcal. For example, the nutritional composition may contain about 5 mg/1000 kcal of β -carotene. The vitamin E may be present in an amount of above about 75 IU/1000 kcal; for example above about 150 IU/1000 kcal.

The pet food contains a calcium source. Suitable calcium sources include calcium carbonate, calcium phosphate (di or tribasic), calcium chloride, calcium citrate bone meal (or bones, for example, chicken necks & backs), or other bioavailable sources of calcium. The pet food preferably contains about 1.5 g/1000 kcal to about 6 g/1000 kcal of calcium; for example about 4.5 g/1000 kcal.

The pet food may also contain vitamin D, vitamin K and zinc. The vitamin D may be present in an amount of about 500IU/1000kcal to about 190000IU/1000kcal. The vitamin K may be present in an amount of above about 0.07mg/1000kcal; for example about 0.125mg/1000kcal. Other minerals and vitamins may also be included.

The pet food preferably contains a source of zinc. Zinc may be provided, by way of example, in the form of zinc sulfate, zinc oxide and zinc-methionine. Further, many ingredients commonly used in pet foods are sources of zinc. The pet food preferably contains about 50 mg/1000 kcal to 500 mg/1000 kcal of zinc.

The pet food may contain a protein source. Any suitable protein source may be used. Suitable protein sources may be selected from any suitable animal or vegetable protein source; for example muscular or skeletal meat, meat and bone meal, poultry meal, fish meal, milk proteins, corn gluten, wheat gluten, soy flour, soy protein concentrates, soy protein isolates, egg proteins, whey, casein, gluten, and the like. For elderly animals, it is preferred for the protein source to contain a high quality animal protein.

The amount of protein provided by the protein source may be selected as desired. For example, the pet food may contain about 12% to about 70% by weight of protein on a dry basis.

The pet food may contain a carbohydrate source. Any suitable carbohydrate source may be used. Preferably the carbohydrate source is provided in the form of grains, flours and starches. For example, the carbohydrate source may be rice, barley, sorghum, millet, oat, corn meal or wheat flour. Simple sugars such as sucrose, glucose and corn syrups may also be used.

The amount of carbohydrate provided by the carbohydrate source may be selected as desired. For example, the pet food may contain up to about 60% by weight of carbohydrate.

The pet food may contain a fat source. Any suitable fat source may be used; both animal fats and vegetable fats. Preferably the fat source is an animal

fat source such as tallow. Vegetable oils such as corn oil, sunflower oil, safflower oil, rape seed oil and the like, may also be used. If desired, the fat source may include long chain fatty acids. Suitable long chain fatty acids include alpha-linoleic acid, gamma linolenic acid, linoleic acid, eicosapentanoic acid, and docosahexanoic acid. Fish oils are a suitable source of eicosapentanoic acids and docosahexanoic acid. Borage oil, blackcurrent seed oil and evening primrose oil are suitable sources of gamma linolenic acid. Safflower oils, sunflower oils, corn oils and soy bean oils are suitable sources of linoleic acid.

The amount of fat provided by the fat source may be selected as desired. For example, the pet food may contain about 5% to about 50% by weight of fat on a dry basis. Preferably, the pet food has a relatively reduced amount of fat.

The exact composition of the protein source, the carbohydrate source and the fat source is not critical and will be selected based upon palatability, availability, cost and processing considerations.

The pet food may also include additional ingredients such as salts, spices, seasonings, flavoring agents, gums, prebiotics and probiotic micro-organisms. Suitable prebiotics include oligosaccharides, such as inulin and its hydrolysis products commonly known as fructooligosaccharides, galacto-oligosaccharides, xylo-oligosaccharides or oligo derivatives of starch.

The prebiotics may be provided in any suitable form. For example, the prebiotic may be provided in the form of plant material which contains the prebiotic. Suitable plant materials includes asparagus, artichokes, onions, wheat or chicory, or residues of these plant materials. Alternatively, the prebiotic may be provided as an inulin extract or a hydrolyzed inulin extract. Extracts from chicory are particularly suitable. Suitable inulin extracts are commercially available.

The probiotic micro-organism may be selected from one or more micro-organisms suitable for animal consumption and which is able to improve the microbial balance in the intestine.

Examples of suitable probiotic micro-organisms include yeasts such as *Saccharomyces*, *Debaromyces*, *Candida*, *Pichia* and *Torulopsis*, moulds such as *Aspergillus*, *Rhizopus*, *Mucor*, and *Penicillium* and *Torulopsis* and bacteria such as the genera *Bifidobacterium*, *Bacteroides*, *Fusobacterium*, *Melissococcus*, *Propionibacterium*, *Streptococcus*, *Enterococcus*, *Lactococcus*, *Staphylococcus*, *Peptostreptococcus*, *Bacillus*, *Pediococcus*, *Micrococcus*, *Leuconostoc*, *Weissella*, *Aerococcus*, *Oenococcus* and *Lactobacillus*. Specific examples of suitable

probiotic micro-organisms are: *Saccharomyces cerevisiae*, *Bacillus coagulans*,
Bacillus licheniformis, *Bacillus subtilis*, *Bifidobacterium bifidum*,
Bifidobacterium infantis, *Bifidobacterium longum*, *Enterococcus faecium*,
Enterococcus faecalis, *Lactobacillus acidophilus*, *Lactobacillus alimentarius*,
5 *Lactobacillus casei* subsp. *casei*, *Lactobacillus casei* Shirota, *Lactobacillus*
curvatus, *Lactobacillus delbruckii* subsp. *lactis*, *Lactobacillus farciminus*,
Lactobacillus gasseri, *Lactobacillus helveticus*, *Lactobacillus johnsonii*,
Lactobacillus reuteri, *Lactobacillus rhamnosus* (*Lactobacillus* GG),
Lactobacillus sake, *Lactococcus lactis*, *Micrococcus varians*, *Pediococcus*
10 *acidilactici*, *Pediococcus pentosaceus*, *Pediococcus acidilactici*, *Pediococcus*
halophilus, *Streptococcus faecalis*, *Streptococcus thermophilus*, *Staphylococcus*
carnosus, and *Staphylococcus xylosus*. The probiotic micro-organisms may be in
powdered, dried form; especially in spore form for micro-organisms which form
spores. Further, if desired, the probiotic micro-organism may be encapsulated to
15 further increase the probability of survival; for example in a sugar matrix, fat
matrix or polysaccharide matrix. Alternatively, the micro-organism may be
applied to a body or particle of pet food such as a kibble in a coating mixture.
Such mixture may comprise a lipid-based carrier and suitable preserving or
protective agents for the micro-organism. Further alternatively, it may be
20 provided as a separately contained supplement to the main food composition,
such as for example in a sachet provided with the composition in its packaged
form, preferably at point of sale.

The pet food may also include a glutamine source. Suitable sources of
glutamine include glutamine in free amino acid form, glutamine in di-peptide
25 form and proteins obtained sorghum, millet, oat, and carob. Gluten also provides
a suitable source of glutamine.

The pet food may be produced using any suitable process. Suitable
processes for wet products include the following:-

Process (i): To produce a thermally gelled emulsion which sets upon
30 cooling, a suitable meat material is comminuted to produce a meat batter.
Suitable gelling agents, for example starches and gums such as kappa-
carrageenan, locust bean gum, guar gum, and xanthan gum may be added to the
meat batter. Usually no more than about 1% by weight of gum is needed.

Water may also be added the meat batter to provide from about 70% to
35 about 85% by weight of moisture. If sufficient moisture is present in the meat
material, water need not be added.

The meat batter is then heated to a temperature suitable to initiate thermal gelling of the mixture; for example a temperature of about 40°C to about 65°C in a mixer-cooker. Steam may be injected into the meat batter if desired. The heated meat batter may be emulsified if desired. The meat batter is then
5 maintained at a temperature of about 40°C to about 65°C until needed. After retorting and cooling to room temperature, the meat batter forms a thermally gelled emulsion which is substantially solid or at least holds its form.

Process (ii): To produce solid food pieces in gravy or gel, solid pieces of meat or other material, or both, may be mixed with a gravy. Solid pieces of other
10 materials may also be used; such as rice grains, pasta or noodles, vegetable pieces, and the like.

The solid food pieces may be in the form of pieces of a thermally gelled matrix. The pieces of the thermally gelled matrix may be produced by any suitable procedure, for example the procedures described in any one of US
15 patents 4,781,939, 5,132,137 and 5,567,466 and PCT application WO 97/02760.

The thermally gelled matrix may be formed in suitable equipment such as an emulsion mill or an extruder to form pieces or chunks. If an extruder is used, the emulsion may be forced through an orifice to provide the emulsion with a desired shape; for example of oval, square or rectangular cross-section. The
20 extrudate may then be cooked in a suitable continuous cooking system; for example a tunnel oven using hot air, steam, mixtures of hot air and steam, or microwaves as the heating medium. The core temperature of the extrudate is raised such that the extrudate undergoes thermal gelling. For example, the core temperature may be raised to at least about 80°C; for example about 85°C to
25 about 95°C. The gelled extrudate may then be cut into pieces and the pieces cooled to provide pieces of a thermally gelled matrix. The pieces may be subjected to flaking if desired. The cooling may be carried out by spraying water on the pieces. Alternatively, other cooling media may be used.

If a gravy is used with the solid food pieces, it may be produced from water,
30 one or more starch or gums, and suitable flavoring agents. The gravy preferably comprises about 20% to about 80% by weight of the mixture of solid pieces and gravy. Suitable gums are kappa-carrageenan, locust bean gum, guar gum and xanthan gum.

If a gel is used with the solid food pieces, it may be produced from a
35 suitable gelling agent, water and suitable flavoring agents. The gel preferably comprises about 20% to about 80% by weight of the mixture of solid pieces and

gravy. Suitable gelling agents are proteins such as gelatin; gums such as alginates, kappa-carrageenan, locust bean gum, guar gum and xanthan gum, and the like. The gel or aspic may be prepared as is conventional.

Products which use a combinations of the processes described above may also be used. For example, a thermally gelled emulsion may be prepared as described above. Then solid food pieces, which may be pieces of a thermally gelled matrix, meat pieces, vegetable pieces, combinations of these pieces, and the like, are combined with the thermally gelled emulsion. As a further alternative, combinations of thermally gelled emulsions and solid food pieces in gravy or gel, may be used. Suitable combinations are described in WO 98/05218 and WO 98/05219; the disclosures of which are incorporated by reference.

The pet foods are then filled into cans or other containers, the containers sealed, and the products retorted in the normal manner. Suitable equipment is commercially available.

A suitable process for a dried pet food is cooking a feed mixture of the various ingredients, forming the cooked mixture into pellets, drying, and then coating the pellets with flavors. The cooking and forming steps are preferably carried out using an extruder, as is well known in the art. However, the pellets may be produced by other cooking procedures such as baking a preformed food body comprising the selected ingredients, preferably in nutritionally balanced proportions.

The amount of the pet food to be consumed by the pet to obtain a beneficial effect will depend upon the size or the pet, the type of pet and the age of the pet. However an amount of the nutritional composition to provide a daily amount of at least about 0.2 g/kg body weight of β -carotene, at least about 3 IU/kg body weight of vitamin E, and at least about 0.12 g/kg body weight of calcium, would usually be adequate. Preferably at least about 2 mg/kg body weight of zinc is administered. For example, for a cat weighing about 4 kg, a daily amount of at least about 0.25 g/kg body weight of β -carotene, at least about 3.5 IU/kg body weight of vitamin E, at least about 0.15 g/kg body weight of calcium and at least about 2.5 mg/kg body weight of zinc, may be fed. For example, for a dog weighing about 20 kg, a daily amount of at least about 0.2g/kg body weight of β -carotene, at least about 3 IU/kg body weight of vitamin E, at least about 0.12g/kg body weight of calcium and at least about 2mg/kg body weight of zinc, may be fed.

It is believed that by providing a pet food composition as provided for above, making it available to minders or owners of elderly pets and drawing attention to the prospect that regular feeding of the composition to such pets can bring about at least a temporary reversal of at least some of the signs of aging in their pet, the pet minder will be encouraged to administer the pet the composition on a regular basis. A suitable way of drawing the attention of the minder to the benefits of the composition would be by way of notice on the packaging of the food composition, alternatively by separate advertising thereof.

Numerous modifications may be made to the embodiments described above without departing from the scope of the invention. Specific examples are now described for further illustration.

Example 1

Thirty six cats are used in a trial. The cats are at least 10 years of age and are in a frail or borderline frail condition. Both male and female cats are used and the numbers are roughly equal across treatments. The cats are screened for hyperthyroidism.

The cats are separated into 4 groups of 9 cats each. Each group has roughly the same amount of hyperthyroid cats as any other group. Also, the male:female ratio for each group is roughly the same.

Each cat is housed in a cage and is subjected to a light cycle of 12 hours darkness and 12 hours light. The temperature is ambient. The cages are cleaned daily. Each cat has *ad libitum* access to food and water except prior to the taking of any blood sample when the cats are fasted overnight.

All cats are fed a canned control diet for a pre-test period of 7 weeks. A blood sample is taken and blood superoxide dismutase levels, calcium, Complete Blood Count (hemoglobin, hematocrit, red blood cell number), albumin and protein are determined.

Each group of cats is then fed a different diet for a period of 6 months. The diets are as follows:

Control Diet:- A canned pet food which is highly palatable to cats. The food contains 24.7% added water, about 73.7% meat, about 1% starch and flavors, minerals and vitamins; all by weight. The food contains normal levels of vitamins and minerals.

Diet A:- The control diet but containing an additional 5 mg/1000kcal of β -carotene and 100 IU/1000 kcal of vitamin E;

Diet B:- The control diet but containing an additional 3 g/100kcal calcium, 1500 IU/1000kcal vitamin D, 0.05 mg/1000kcal vitamin K and 40 mg/1000kcal zinc.

5 Diet C:- The control diet but containing and additional 5 mg/1000 kcal of β -carotene, 100 IU/1000 kcal of vitamin E, 3 g/100 kcal calcium, 1500 IU/1000 kcal vitamin D, 0.05 mg/1000 kcal vitamin K and 40 mg/1000 zinc.

The cats are examined upon commencement of the trial, after 3 months and after 6 months. The examination includes:

- a physical examination;
- 10 - a subjective assessment of body condition;
- determination of blood superoxide dismutase levels, calcium balance, Complete Blood Count (hemoglobin, hematocrit, red blood cell number), albumin and protein.

The results are as follows:-

Change in:	Control Diet	Diet A	Diet B	Diet C
Surviving cats	75%	75%	55%	100%
Hematocrit (%)	1.5	3.6	-0.4	3.6
Red Blood cell (m/cu mm)	0.101	0.976	-0.23	0.621
Total protein	-0.6	-0.3	-0.8	0.3

20 All cats fed Diet C have improved longevity. The cats fed diets A and C have a significant improvement in hematocrit, hemoglobin, and red blood cell levels. Indeed, these represent at least a partial reversal to levels associated with far younger cats. While total blood protein decreases in cats fed the control diet, it does not decrease in cats fed diets A and C. Decreased hemoglobin, hematocrit, red blood cell number, and protein are commonly observed in elderly pets. Diet B, which contains calcium but not the antioxidant vitamins A and E, performs worse than the control. Hence combining calcium with the antioxidant vitamins A and E offers a surprising and synergistic improvement.

Example 2

30 The effect of the diet of the present invention was monitored over a period of six months in a group of thirty six elderly cats. Each cat was over 8 years of age at commencement of the trial. The cats were divided into two groups

(Control and Diet A) of 18 cats each having similar age profiles. The cats are screened prior to being chosen for the trial to eliminate those with known pre-existing disease conditions. Preliminary screening is performed by: physical examination, cbc, serum chemistries, thyroid hormone and urinalysis including urine protein/creatinine ratio. These parameters are all routinely recommended in the veterinary evaluation of geriatric pets.. In each group, cats are blocked for assignment to diets on the basis of sex, age, and a "health status" parameter to be derived from initial screening tests listed above

Each cat is housed in a cage and is subjected to a light cycle of 12 hours darkness and 12 hours light. The temperature is ambient. The cages are cleaned daily. Each cat has *ad libitum* access to food and water. For a month prior to commencement of the trial, both groups are fed a standard diet, available commercially under the brand name Friskies Salmon.

From the commencement date, Control continued to be fed the Friskies Salmon diet as a control, while Diet A was fed a diet consisting of Friskies Salmon plus the following additives: 5 mg/1000kcal of β -carotene and 100 IU/1000 kcal of vitamin E. Calcium content was approximately 4.5 g/1000 kcal ME.

Each participating cat wears a collar having an activity monitor that contains an accelerometer mounted thereon. The activity monitor was a model Actiwatch 16 manufactured by Mini Mitter Co. , Inc., (Sunriver, Oregon, USA). The activity monitor is capable of sensing any motion and integrates degree and intensity of motion. The monitor provides the data tabulated below:

Table 1

<u>Diet</u>	<u>Average Activity per 24 hours</u>			
	<u>0 months</u>	<u>6 months</u>	<u>Change from Initial</u>	<u>% of Cats With Increase</u>
Control	112'603	59'958	-52'644	0.0
Diet A	65'056	84'205	19'148	100.0

Table 2

<u>Diet</u>	<u>Number of Minutes Active per Day</u>			
	<u>0 months</u>	<u>6 months</u>	<u>Change from Initial</u>	<u>% of Cats With Increase</u>
Control	90.4	40.1	-50.3	0.0
Diet A	52	61.8	9.8	100.0

Table 3

<u>Diet</u>	<u>Number of Minutes Alert or Active per Day</u>			
	<u>0 months</u>	<u>6 months</u>	<u>Change from Initial</u>	<u>% of Cats With Increase</u>
Control	370.9	235.7	-135.2	0.0
Diet A	252.2	298.3	46	100.0

5

Table 4

<u>Diet</u>	<u>Number of Hours Alert or Active per Day</u>			
	<u>0 months</u>	<u>6 months</u>	<u>Change from Initial</u>	<u>% of Cats With Increase</u>
Control	6.18	3.93	-2.25	0.0
Diet A	4.20	4.97	0.77	100.0

Table 5

<u>Diet</u>	<u>Average Activity per Alert or Active Period (Activity Score/Min)</u>			
	<u>0 months</u>	<u>6 months</u>	<u>Change from Initial</u>	<u>% of Cats With Increase</u>
Control	299.4	255.6	-43.9	0.0
Diet A	227.5	256.5	29.0	66.7

10

The cats in the control diet group (Control) experience a decline in activity. This decline is in line with expectations for a 6 month period at their age. In contrast, elderly cats fed on the antioxidant-containing diet of Diet A demonstrate remarkable increases in activity levels. This provides evidence of an increase in ease of movement and therefore of a general improvement in quality of life.

15

Claims

1. A method for improving the condition of elderly pets, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of an antioxidant.
2. A method according to claim 1 in which the antioxidant source is a vitamin or a precursor of a vitamin.
3. A method according to claim 2 in which the vitamin is vitamin E.
4. A method according to claim 2 in which the precursor is β -carotene .
5. A method according to any one of the preceding claims in which the nutritional composition includes a zinc source.
6. A method according to any one of the preceding claims in which the nutritional composition is a nutritionally complete pet food.
7. A method according to any one of the preceding claims in which the nutritional composition further comprises a prebiotic and/or a probiotic micro-organism.
8. A method according to claim 7 in which the prebiotic is selected from the group of inulin, fructooligosaccharides and plant materials which contain inulin and/or fructooligosaccharides.
9. A method according to any one of the preceding claims in which the nutritional composition further comprises a source of glutamine.
10. A method for increasing the longevity of an elderly pet, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of an antioxidant.

11. A method according to claim 10 in which the antioxidant source is a vitamin source.
- 5 12. A method according to claim 11 in which the vitamin source is a vitamin precursor.
13. A method according to claim 12 in which the precursor is β -carotene.
- 10 14. A method according to claim 12 in which the vitamin source provides vitamin E.
- 15 15. A method according to any one of claims 10 to 14 in which the nutritional composition includes a zinc source.
- 16 16. A method according to any one of claims 10 to 15 in which the nutritional composition is a nutritionally complete pet food.
- 20 17. A method according to claim any one of claims 10 to 16 in which the nutritional composition further comprises a prebiotic and/or a probiotic micro-organism.
- 25 18. A method according to claim 17 in which the prebiotic is selected from the group of inulin, fructooligosaccharides and plant materials which contain inulin and/or fructooligosaccharides.
- 30 19. A method according to any one of claims 10 to 18 in which the nutritional composition further comprises a source of glutamine.
20. A method of increasing the quality of life of an elderly pet, the method comprising administering to the pet a nutritional composition which contains a calcium source, a zinc source and a source of an antioxidant.
- 35 21. A method according to claim 20 in which the antioxidant source is selected from β -carotene and vitamin E.

22. A method according to claim 21 in which the composition is administered in an amount effective to increase the activity level of the pet.
- 5 23. A method for increasing the longevity of an elderly cat, the method comprising administering to the cat an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene, and vitamin E.
- 10 24. A method according to claim 23 in which the elderly cat is administered a daily amount of at least about 0.25 g/kg body weight of β -carotene, at least about 3.5 IU/kg body weight of vitamin E, at least about 0.15 g/kg body weight of calcium and at least about 2.5 mg/kg body weight of zinc.
- 15 25. A method of increasing the activity level of an elderly cat, the method comprising administering to the cat an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene and vitamin E.
- 20 26. A method for increasing the longevity of an elderly dog, the method comprising administering to the dog an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene and vitamin E.
- 25 27. A method according to claim 26 in which the elderly dog is administered a daily amount of at least about 0.2 g/kg body weight of β -carotene, at least about 3 IU/kg body weight of vitamin E, at least about 0.12 g/kg body weight of calcium and at least about 2 mg/kg body weight of zinc.
- 30 28. A method for reversing a sign of aging in an elderly pet comprising administering to the pet a nutritional composition comprising a source of calcium and a source of an antioxidant.
- 35 29. A method according to claim 28 wherein the antioxidant source is selected from sources of vitamins and vitamin precursors.

30. A method according to claim 28 or claim 29 wherein the sign of aging is a decrease in activity.
- 5 31. A pet food for elderly pets, the pet food comprising a protein source, a lipid source, a calcium source, a zinc source, β -carotene and vitamin E.
32. A pet food according to claim 31 which comprises at least about 3 g/1000 kcal of calcium, at least about 50 mg/1000 of zinc, at least about 5 mg/1000 kcal of β -carotene, and at least about 150 IU/1000 kcal of vitamin E.
- 10 33. A pet food according to claim 31 or claim 32 including a nutritional agent which promotes the growth of bifido- and lactic-bacteria in the gastrointestinal tract of the pet.
- 15 34. A pet food according to claim 33 in which the nutritional agent is selected from the group comprising prebiotics and probiotic micro-organisms.
- 20 35. A process for reversing a sign of aging in an elderly pet comprising the steps of providing a pet food composition comprising a source of calcium and a source of an antioxidant, making the composition available to a minder of an elderly pet and providing means of encouraging the pet owner to administer the said composition to the pet on a regular basis.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/EP 00/08870

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A23K1/16 A23K1/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23K A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, WPI Data, EPO-Internal, CAB Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	US 6 156 355 A (BENNETT JEFFREY P ET AL) 5 December 2000 (2000-12-05) column 1, line 17 - line 30 column 4, line 7 - line 17 column 12, line 1 - line 7 column 12, line 59 - column 13, line 5 claims 1-7	1-35
X	J.E. BRANAM: "Dietary management of geriatric dogs and cats" VETERINARY TECHNICIAN, vol. 8, no. 10, 1987, pages 501-503, XP000978775 the whole document	1-35

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

16 January 2001

Date of mailing of the international search report

30/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Dekeirel, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/08870

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	J.E. MOSIER: "Supplementing the diets of elderly dogs" VETERINARY MEDICINE., vol. 80, no. 2, 1985, pages 51-55, XP000978776 VETERINARY MEDICINE, EDWARDSVILLE, KS., US ISSN: 8750-7943 the whole document ----	1-35
Y	DATABASE WPI Section Ch, Week 199815 Derwent Publications Ltd., London, GB; Class D13, AN 1998-167578 XP002157418 & RU 2 086 150 C (FILIPOVICH E G), 10 August 1997 (1997-08-10) abstract ----	1-35
Y	M. MEYDANI ET AL.: "Effect of vitamin E (E) supplementation on plasma E and immune response of young and old beagle dogs" FASEB JOURNAL., vol. 12, no. 5, 1998, page A840 XP002157417 FED. OF AMERICAN SOC. FOR EXPERIMENTAL BIOLOGY, BETHESDA, MD., US ISSN: 0892-6638 Abstract 4866 ----	1-35
Y	F.J.H. PASTOOR ET AL.: "Dietary calcium chloride vs. calcium carbonate reduces urinary pH and phosphorus concentration, improves bone mineralization and depresses kidney calcium level in cats" JOURNAL OF NUTRITION., vol. 124, no. 11, 1994, pages 2212-2222, XP000978817 WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, PHILADELPHIA, PA., US ISSN: 0022-3166 page 2212, Abstract ----	1-35
A	E. KOLB ET AL.: "Zum Bedarf an Vitaminen und an Ascorbinsäure beim Hund, mit Bemerkungen zur Publikation von M. Torel, TU 51, 785-790, 1996" TIERAERZTLICHE UMSCHAU, vol. 52, no. 12, 1997, pages 728-733, XP000978781. KONSTANZ, DE ISSN: 0049-3864 page 732, column 1, last paragraph -column 2, paragraph 3 ----- -/-	1-35

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/08870

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,A	<p>WO 00 44375 A (HARPER E JEAN ;MARS UK LTD (GB)) 3 August 2000 (2000-08-03)</p> <p>page 11, line 15 - line 20 page 13, line 7 - line 23 page 50, line 11 -page 51, line 11 examples 18,19 claims 1-33</p>	<p>1-6, 10-16, 20-22, 26, 28-30,35</p>
A	<p>KEARNS R J ET AL: "EFFECT OF AGE, BREED AND DIETARY OMEGA-6 (N-6): OMEGA-3 (N-3) FATTYACID RATIO ON IMMUNE FUNCTION, EICOSANOID PRODUCTION, AND LIPID PEROXIDATION IN YOUNG AND AGED DOGS" VETERINARY IMMUNOLOGY AND IMMUNOPATHOLOGY,AMSTERDAM,NL, vol. 69, no. 2/04, 1999, pages 165-183, XP000924834 ISSN: 0165-2427 page 167; table 1</p>	<p>1-35</p>
A	<p>D.M. GEVAERT ET AL.: "Effect of macromineral composition of diets on blood acid-base equilibrium and urinary acidity in dogs" JOURNAL OF NUTRITION., vol. 121121, no. 11S, 1991, pages S93-S94, XP000978832 WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, PHILADELPHIA, PA.,, US ISSN: 0022-3166 the whole document</p>	<p>1</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 00/08870

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6156355	A	05-12-2000	NONE	
RU 2086150	C	10-08-1997	NONE	
WO 0044375	A	03-08-2000	AU 2304200 A	18-08-2000

WO 01/17366

PCT/EP00/08870

1

Improving Condition of Elderly PetsField of the Invention

5 This invention relates to a composition for improving the condition of elderly pets. The invention also relates to a method for improving the condition of elderly pets.

Background of the Invention

10

Elderly pets often become frail in their last few years of life. From an appearance point of view, they become thin and have poor skin and coat condition. Other symptoms include weight gain, increased water intake, digestive system problems, and joint stiffness and energy loss or lower activity levels in general. Also, the density of their bones may decrease making them susceptible to bone breakage. Further, elderly pets may be more susceptible to cancers than younger animals.

15 Certain of these problems may be effectively treated using medication. However, a better alternative would be to delay the onset of these problems, or treat these problems, through diet adjustments. In particular, elderly animals should be fed a balanced, maintenance food that contains high quality protein, lower amounts of fat to reduce energy intake, dietary fiber, and antioxidants.

INSERT HERE →

(ANNEXURE "A")

25

However, despite the use of balanced, maintenance foods, the condition of elderly animals may deteriorate rapidly. Therefore there is a need for nutritional ways of improving the condition and/or increasing the longevity of elderly pets.

Summary of the Invention

30 Accordingly, in one aspect, this invention provides a method for maintaining or improving the condition of elderly pets, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of antioxidant. The said antioxidant source may be selected from sources of vitamins and vitamin precursors. In a preferred embodiment, the source is selected from sources of vitamin E, vitamin C and β -carotene.

35

SUBSTITUTE SHEET (RULE 26)

AMENDED SHEET

WO 01/17366

8

PCT/EP00/08870

gravy. Suitable gelling agents are proteins such as gelatin; gums such as alginates, kappa-carrageenan, locust bean gum, guar gum and xanthan gum, and the like. The gel or aspic may be prepared as is conventional.

5 Products which use a combinations of the processes described above may also be used. For example, a thermally gelled emulsion may be prepared as described above. Then solid food pieces, which may be pieces of a thermally gelled matrix, meat pieces, vegetable pieces, combinations of these pieces, and the like, are combined with the thermally gelled emulsion. As a further alternative, combinations of thermally gelled emulsions and solid food pieces in 10 gravy or gel, may be used. Suitable combinations are described in WO 98/05218 and WO 98/05219; the disclosures of which are incorporated by reference.

The pet foods are then filled into cans or other containers, the containers sealed, and the products retorted in the normal manner. Suitable equipment is commercially available.

15 A suitable process for a dried pet food is cooking a feed mixture of the various ingredients, forming the cooked mixture into pellets, drying, and then coating the pellets with flavors. The cooking and forming steps are preferably carried out using an extruder, as is well known in the art. However, the pellets may be produced by other cooking procedures such as baking a preformed food 20 body comprising the selected ingredients, preferably in nutritionally balanced proportions.

The amount of the pet food to be consumed by the pet to obtain a beneficial effect will depend upon the size or the pet, the type of pet and the age of the pet. However an amount of the nutritional composition to provide a daily amount of 25 at least about 0.2^mg/kg body weight of β -carotene, at least about 3 IU/kg body weight of vitamin E, and at least about 0.12 g/kg body weight of calcium, would usually be adequate. Preferably at least about 2 mg/kg body weight of zinc is administered. For example, for a cat weighing about 4 kg, a daily amount of at least about 0.25^mg/kg body weight of β -carotene, at least about 3.5 IU/kg b dy 30 weight of vitamin E, at least about 0.15 g/kg body weight of calcium and at least about 2.5 mg/kg body weight of zinc, may be fed. For example, for a dog weighing about 20 kg, a daily amount of at least about 0.2^mg/kg body weight of β -carotene, at least about 3 IU/kg body weight of vitamin E, at least about 0.12g/kg body weight of calcium and at least about 2mg/kg body weight of zinc, may be 35 fed.

SUBSTITUTE SHEET (RULE 26)

AMENDED SHEET

ANNEXURE "A"

Passage to be inserted at page 1, line 23:

Dietary requirements for geriatric pets are addressed by Branam, 'Dietary management of geriatric dogs and cats', Veterinary Technician, vol. 8, no. 10, 1987, pages 501-503, where he advocates properly formulated diets containing moderate levels of high quality protein, essential fatty acids, vitamins, calcium, zinc and fiber in amounts greater than for younger animals. The vitamins he lists are A, B₁, B₆, B₁₂ and E.

NO6392

-13-

Claims

1. A method for improving the condition of elderly pets, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of an antioxidant, being a vitamin precursor.
2. A method according to claim 1 in which the precursor is β -carotene.
3. A method according to claim 1 or claim 2 in which the nutritional composition includes a zinc source.
4. A method according to any one of the preceding claims in which the nutritional composition is a nutritionally complete pet food.
5. A method according to any one of the preceding claims in which the nutritional composition further comprises a prebiotic and/or a probiotic micro-organism.
6. A method according to claim 5 in which the prebiotic is selected from the group of inulin, fructooligosaccharides and plant materials which contain inulin and/or fructooligosaccharides.
7. A method according to any one of the preceding claims in which the nutritional composition further comprises a source of glutamine.
8. A method for increasing the longevity or quality of life of an elderly pet, the method comprising administering to the pet an effective amount of a nutritional composition which contains a calcium source and a source of an antioxidant, being a vitamin precursor.
9. A method according to claim 8 in which the precursor is β -carotene.
10. A method according to claim 8 or claim 9 in which the composition comprises a vitamin source providing vitamin E.

AMENDED SHEET

NO6392

-14-

11. A method according to any one of claims 8 to 10 in which the nutritional composition includes a zinc source.
12. A method according to any one of claims 8 to 11 in which the nutritional composition is a nutritionally complete pet food.
13. A method according to claim any one of claims 8 to 12 in which the nutritional composition further comprises a prebiotic and/or a probiotic micro-organism.
14. A method according to claim 13 in which the prebiotic is selected from the group of inulin, fructooligosaccharides and plant materials which contain inulin and/or fructooligosaccharides.
15. A method according to any one of claims 8 to 14 in which the nutritional composition further comprises a source of glutamine.
16. A method according to any one of claims 8 to 15 in which the composition is administered in an amount effective to increase the activity level of the pet.
17. A method for increasing the longevity of an elderly cat, the method comprising administering to the cat an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene, and vitamin E.
18. A method according to claim 23 in which the elderly cat is administered a daily amount of at least about 0.25 mg/kg body weight of β -carotene, at least about 3.5 IU/kg body weight of vitamin E, at least about 0.15 g/kg body weight of calcium and at least about 2.5 mg/kg body weight of zinc.
19. A method of increasing the activity level of an elderly cat, the method comprising administering to the cat an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene and vitamin E.

AMENDED SHEET

Emof zeit: 30/10/2001 17:10

Emof nr: 822 D 015

NO6392

-15-

- 5
20. A method for increasing the longevity of an elderly dog, the method comprising administering to the dog an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene and vitamin E.
- 10
21. A method according to claim 20 in which the elderly dog is administered a daily amount of at least about 0.2 mg/kg body weight of β -carotene, at least about 3 IU/kg body weight of vitamin E, at least about 0.12 g/kg body weight of calcium and at least about 2 mg/kg body weight of zinc.
- 15
22. A method for reversing a sign of aging in an elderly pet comprising administering to the pet a nutritional composition comprising a source of calcium and a source of an antioxidant.
- 20
23. A method according to claim 22 wherein the antioxidant source is selected from sources of vitamins and vitamin precursors.
- 25
24. A method according to claim 22 or claim 23 wherein the sign of aging is a decrease in activity.
- 30
25. A pet food for elderly pets, the pet food comprising a protein source, a lipid source, a calcium source, a zinc source, β -carotene and vitamin E.
- 35
26. A pet food according to claim 25 which comprises at least about 3 g/1000 kcal of calcium, at least about 50 mg/1000 kcal of zinc, at least about 5 mg/1000 kcal of β -carotene, and at least about 150 IU/1000 kcal of vitamin E.
27. A pet food according to claim 25 or claim 26 including a nutritional agent which promotes the growth of bifido- and lactic-bacteria in the gastrointestinal tract of the pet.
28. A pet food according to claim 27 in which the nutritional agent is selected from the group comprising prebiotics and probiotic micro-organisms.

AMENDED SHEET

NO6392

-16-

- 5 29. A process for reversing a sign of aging in an elderly pet comprising the steps of providing a pet food composition comprising a source of calcium and a source of an antioxidant, making the composition available to a minder of an elderly pet and providing means of encouraging the pet minder to administer the said composition to the pet on a regular basis.
- 10 30. A process for maintaining or increasing total blood protein in an elderly pet comprises administering to the pet a foodstuff comprising a source of calcium and a source of an antioxidant.
- 15 31. A process according to claim 36 wherein the foodstuff is capable of providing the pet a daily amount of at least about 0.25 mg/kg of the pet's body weight of β -carotene, at least about 3.5 IU/kg body weight of vitamin E, at least about 0.15 g/kg body weight of calcium and at least about 2.5 mg/kg body weight of zinc.
- 20 32. Use of a petfood composition for the increasing of total blood protein in an elderly pet, the composition having been formulated to provide at least about 0.25 mg/kg of the pet's body weight of β -carotene, at least about 3.5 IU/kg body weight of vitamin E, at least about 0.15 g/kg body weight of calcium and at least about 2.5 mg/kg body weight of zinc when fed as a complete meal.
- 25 33. Use of a petfood composition to increase physical energy levels in an elderly pet, the composition comprising an effective amount of a nutritional composition which contains a calcium source, a zinc source, β -carotene and vitamin E.
- 30 34. Use of a nutritional composition in reversing a sign of aging in an elderly pet, the composition comprising a source of calcium, zinc and a source of an antioxidant.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 6392/W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 00/08870	International filing date (day/month/year) 08/09/2000	(Earliest) Priority Date (day/month/year) 09/09/1999
Applicant SOCIETE DES PRODUITS NESTLE S.A.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :



contained in the international application in written form.



filed together with the international application in computer readable form.



furnished subsequently to this Authority in written form.



furnished subsequently to this Authority in computer readable form.



the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.



the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____



as suggested by the applicant.



because the applicant failed to suggest a figure.



because this figure better characterizes the invention.



None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PC 00/08870

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A23K1/16 A23K1/18

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A23K A61K A61P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, WPI Data, EPO-Internal, CAB Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E	US 6 156 355 A (BENNETT JEFFREY P ET AL) 5 December 2000 (2000-12-05) column 1, line 17 - line 30 column 4, line 7 - line 17 column 12, line 1 - line 7 column 12, line 59 - column 13, line 5 claims 1-7 ---	1-35
X	J.E. BRANAM: "Dietary management of geriatric dogs and cats" VETERINARY TECHNICIAN, vol. 8, no. 10, 1987, pages 501-503, XP000978775 - the whole document --- -/--	1-35

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

16 January 2001

Date of mailing of the international search report

30/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Dekeirel, M

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	J.E. MOSIER: "Supplementing the diets of elderly dogs" VETERINARY MEDICINE., vol. 80, no. 2, 1985, pages 51-55, XP000978776 - VETERINARY MEDICINE, EDWARDSVILLE, KS., US ISSN: 8750-7943 the whole document ---	1-35
Y	DATABASE WPI Section Ch, Week 199815 Derwent Publications Ltd., London, GB; Class D13, AN 1998-167578 XP002157418 & RU 2 086 150 C (FILIPOVICH E G), 10 August 1997 (1997-08-10) abstract ---	1-35
Y	M. MEYDANI ET AL.: "Effect of vitamin E (E) supplementation on plasma E and immune response of young and old beagle dogs" FASEB JOURNAL., vol. 12, no. 5, 1998, page A840 XP002157417 FED. OF AMERICAN SOC. FOR EXPERIMENTAL BIOLOGY, BETHESDA, MD., US ISSN: 0892-6638 Abstract 4866 ---	1-35
Y	F.J.H. PASTOOR ET AL.: "Dietary calcium chloride vs. calcium carbonate reduces urinary pH and phosphorus concentration, improves bone mineralization and depresses kidney calcium level in cats" JOURNAL OF NUTRITION., vol. 124, no. 11, 1994, pages 2212-2222, XP000978817 - WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, PHILADELPHIA, PA., US ISSN: 0022-3166 page 2212, Abstract ---	1-35
A	E. KOLB ET AL.: "Zum Bedarf an Vitaminen und an Ascorbinsäure beim Hund, mit Bemerkungen zur Publikation von M. Torel, TU 51, 785-790, 1996" TIERAERZTLICHE UMSCHAU, vol. 52, no. 12, 1997, pages 728-733, XP000978781 - KONSTANZ, DE ISSN: 0049-3864 page 732, column 1, last paragraph -column 2, paragraph 3 --- -/--	1-35

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, A	<p>WO 00 44375 A (HARPER E JEAN ; MARS UK LTD (GB)) 3 August 2000 (2000-08-03)</p> <p>page 11, line 15 - line 20 page 13, line 7 - line 23 page 50, line 11 - page 51, line 11 examples 18, 19 claims 1-33</p>	<p>1-6, 10-16, 20-22, 26, 28-30, 35</p>
A	<p>--- KEARNS R J ET AL: "EFFECT OF AGE, BREED AND DIETARY OMEGA-6 (N-6): OMEGA-3 (N-3) FATTYACID RATIO ON IMMUNE FUNCTION, EICOSANOID PRODUCTION, AND LIPID PEROXIDATION IN YOUNG AND AGED DOGS" VETERINARY IMMUNOLOGY AND IMMUNOPATHOLOGY, AMSTERDAM, NL, vol. 69, no. 2/04, 1999, pages 165-183, XP000924834 ~ ISSN: 0165-2427 page 167; table 1</p>	<p>1-35</p>
A	<p>--- D.M. GEVAERT ET AL.: "Effect of macromineral composition of diets on blood acid-base equilibrium and urinary acidity in dogs" JOURNAL OF NUTRITION., vol. 121/121, no. 11S, 1991, pages S93-S94, XP000978832 ~ WISTAR INSTITUTE OF ANATOMY AND BIOLOGY, PHILADELPHIA, PA,, US ISSN: 0022-3166 the whole document</p> <p>-----</p>	<p>1</p>

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/00/08870

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 6156355	A	05-12-2000	NONE	
RU 2086150	C	10-08-1997	NONE	
WO 0044375	A	03-08-2000	AU 2304200 A	18-08-2000